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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,141	08/24/2001	Teruo Umemoto	40222.0003US01	2780

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DENVER, CO 80202-5647

EXAMINER

WONG, EDNA

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 03/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/939,141	UMEMOTO, TERUO	
	Examiner	Art Unit	
	Edna Wong	1753	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-75 is/are pending in the application.
- 4a) Of the above claim(s) 17-20 and 28-75 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-12, 14-16 and 21 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 13 and 22-27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application):  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)              | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other:  |

### ***Election/Restrictions***

Applicant's election without traverse of Group I, claims **1-16 and 21-27**, in Paper No. 6 is acknowledged. Accordingly, claims **17-20 and 28-75** are withdrawn from consideration as being directed to a non-elected invention.

The requirement is still deemed proper and is therefore made FINAL.

### ***Specification***

The disclosure is objected to because of the following informalities:

page 19, line 19, the word "tichlorotrifluoroethane" should be amended to the word -- trichlorotrifluoroethane --.

Appropriate correction is required.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Objections***

Claims **16 and 21-27** are objected to because of the following informalities:

Claim 16

line 1, the word -- of -- should be inserted after the word "range".

Claims 21-27

line 1, respectively of each, the word "a" should be deleted.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

Claims **14-16** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14

line 1, it appears that "one or more of electrodes" are the same as those recited in claim 1, line 4. However, it is unclear if they are.

Claim 15

line 1, it appears that the "aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings" is the same as that recited in claim 1, lines 5-6. However, it is unclear if it is. If it is, then it is suggested that the word -- the -  
- be inserted after the word "of".

Claim 16

line 1, it appears that the "electrolyte" is the same as that recited in claim 1, line 5. However, it is unclear if it is. If it is, then it is suggested that the word -- the -- be inserted after the word "of".

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims **1-3, 5, 8, 12, 15-16 and 21** are rejected under 35 U.S.C. 102(b) as being anticipated by **JP 61-271323**.

The JP reference teaches a method for the production of a polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings, the method comprising the step of:

passing an electric current (page 3, lines 9-10) between two or more electrodes (= an anode and a cathode) [pages 3-4, Examples] immersed in an electrolyte mixture comprising an ester (= propylene carbonate), an electrolyte (= tetraethylammonium tetrafluoroborate) and an aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings (= fluorene) [page 2, lines 22-34].

The electrolyte in the electrolyte mixture is tetraethylammonium tetrafluoroborate

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(page 2, lines 22-34).

The electrolyte mixture further comprises a solvent (= propylene carbonate) [page 2, lines 22-34].

The ester is one consisting of a carbonic ester (= propylene carbonate) [page 2, lines 22-34].

The electrodes are comprised of platinum and nickel (pages 3-4, Examples).

The concentration of aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is in the range of 0.001-1 mol/L (= 0.01 mol/L to 1 mol/L) [page 3, lines 3-5].

The concentration of electrolyte is in the range of 0.001-1 mol/L (= 0.1 mol/L to 1 mol/L) [page 3, lines 3-5].

The polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(9-fluorenone) [= black deposits] and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is fluorene (pages 3-4, Examples).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **4 and 9-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **JP 61-271323** as applied to claims 1-3, 5, 8, 12, 15-16 and 21 above.

The JP reference is as applied above and incorporated herein.

The JP reference does not teach wherein the solvent dissolves the ester.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one skilled in the art would have been motivated to have modified the method of the JP reference with wherein the solvent dissolves the ester because if the ester is the solvent, then the ester would have been dissolved in the electrolytic mixture in order for the ester to react in the electrochemical production of the polymer.

As to wherein the solvent is selected from the group consisting of acetonitrile, ... mixtures thereof, the JP reference teaches propylene carbonate, acetonitrile, nitromethane, nitrobenzene, tetrahydrofuran and dimethoxyethane as the solvents (page 2, lines 26-28). It appears that these solvents, whether alone or in combination, would have been functionally equivalent because the solvent is a result-effective variable and one skilled in the art has the skill to determine the solvent that would succeed in carrying out the desired reaction, i.e., dissolving the ester and/or dissolving the aromatic compound, absent evidence to the contrary. MPEP § 2141.03 and §

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2144.05(b).

As to wherein the concentration of the ester in the mixture is greater than 20% by volume, the concentration of the ester is a result-effective variable and one skilled in the art has the skill to calculate the concentration that would determine the success of the desired reaction to occur, absent evidence to the contrary. MPEP § 2141.03 and § 2144.05(b).

Furthermore, a concentration of greater than 20% by volume appears to be a mere optimization which solves no stated problems and produces no unexpected results, unless proven otherwise.

As to further comprising one or more electrodes used as reference electrodes for voltage control, reference electrodes are conventional in the electrolysis art. The use of an reference electrode to control voltage or sense any other electrolysis condition in the method of the JP reference would have been well within the skill of the artisan.

Furthermore, the selection of old parts to operate in new environments in order to achieve the same results was held to have been obvious. *In re Ross* 105 USPQ 237. And the substitution of known equivalent structures was held to have been obvious. *In re Ruff* 118 USPQ 343 (CCPA 1958).

***Allowable Subject Matter***



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The following is a statement of reasons for the indication of allowable subject matter:

Claim **6** defines over the prior art of record because the prior art does not teach or suggest the method of claim 1 wherein the ester is a simple ester ... mixtures thereof.

Claim **7** defines over the prior art of record because the prior art does not teach or suggest the method of claim 1 wherein the ester is a lactone ... mixtures thereof.

Claims **13 and 14** define over the prior art of record because the prior art does not teach or suggest the method of claim 1 wherein the electrolyte mixture further comprises a polymer having at least one unit having at least one cyclopentane structure condensed with at least two aromatic rings.

Claim **22** defines over the prior art of record because the prior art does not teach or suggest the method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(cyclopenta[def]phenanthrene-4-one) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 4*H*-cyclopenta[def]phenanthrene.

Claim **23** defines over the prior art of record because the prior art does not teach or suggest the method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(8*H*-cyclopenta[def]fluorren-4-one) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 4,8-

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dihydro-cyclopenta[def]fluorene.

Claim **24** defines over the prior art of record because the prior art does not teach or suggest the method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(cyclopenta[def]fluorene-4,8-dione) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 4,8-dihydro-cyclopenta[def]fluorene.

Claim **25** defines over the prior art of record because the prior art does not teach or suggest the method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly(benzo[b]fluoren-11-one) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 11H-benzo[b]fluorene.

Claim **26** defines over the prior art of record because the prior art does not teach or suggest the method of claim 1 wherein the polymer having at least one unit that contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly (dibenzo[b,h]fluoren-12-one) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 12H-benzo[b,h]fluorene.

Claim **27** defines over the prior art of record because the prior art does not teach or suggest the method of claim 1 wherein the polymer having at least one unit that

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contains at least one cyclopentanone structure condensed with at least two aromatic rings is poly (indo[1,2-*b*]fluorene-6,12-one) and the aromatic compound having at least one cyclopentane structure condensed with at least two aromatic rings is 6,12-dihydro-indeno[1,2-*b*]fluorene.

Claims 6-7, 13-14 and 22-27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 14 and 22-27 would be allowable if rewritten to overcome the claim objection(s) and/or rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (703) 308-3818. The examiner can normally be reached on Mon-Fri 7:30 am to 5:00 pm, alt. Fridays off.

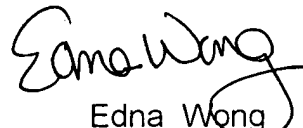
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 873-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-

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1495.

  
Edna Wong  
Primary Examiner  
Art Unit 1753

EW  
March 26, 2003